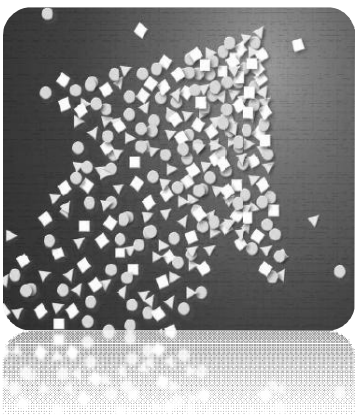
Digging Deeper into Bloom's:

Mining for Depth & Complexity



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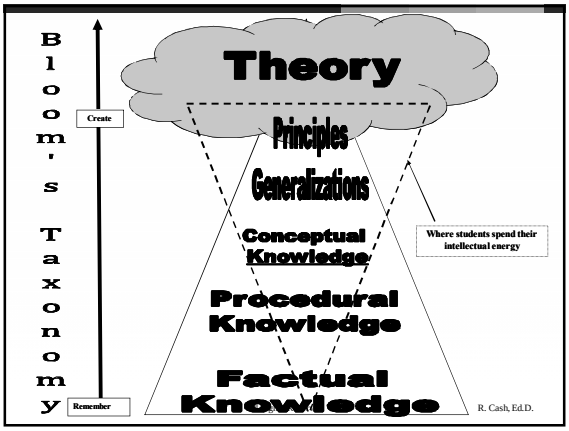
Today's session

- Participants will **understand** the essentials of the 21st century curriculum (**Conceptual**)
- Participants will **be able to** design a unit of study using the 21st century framework (**Procedural**)
- Participants will **know** how to level activities for all learners (**Factual**)

A Rigorous Curriculum: Depth & Complexity

- The level of information needed to solve complex and abstract problems within and across disciplines
  - Using facts and procedures automatically
  - Thinking abstractly through concepts
  - Incorporating advanced levels of self-regulation
- The thought process the brain goes through to manage the information
  - Bloom's Taxonomy
    - Analyze
    - Evaluate
    - Create
  - Creative Thinking
  - Critical Reasoning
  - Problem Solving



The Essentials

- **Concept**
  What students will understand
- **Procedure**
  What students will be able to do
- **Fact**
  What students will know

Concepts

- Are broad
- Reveal fundamental patterns within a content area
- Allow for valid connections within a content area
- Apply to several content areas
- Disclose fundamental similarities/differences within/across disciplines
- Draw the learner deeper into the subject matter, inspiring curiosity & interest

Concept Teaching . . .

- Stresses depth over breadth
- Teaches important ideas in a discipline, not only facts
- Promotes inter-disciplinarity
- Endures

Figure 2.3 200 Abstract Concepts

1. Adaptation	51. Engagement	101. Justification	151. Rationality
2. Alienation	52. Engineering	102. Knowledge	152. Reality
3. Attitude	53. Environment	103. Language	153. Reason
4. Authenticity	54. Equality	104. Learning	154. Reductionism
5. Authority	55. Essence	105. Life and death	155. Reflection
6. Autonomy	56. Eternity	106. Literature	156. Rejection
7. Awareness	57. Ethics	107. Love	157. Relationships
8. Beauty	58. Evolution	108. Loyalty	158. Religion
9. Behavior	59. Existence	109. Man	159. Resolution
10. Being and becoming	60. Experience	110. Management	160. Responsibility
11. Beliefs	61. Experimentation	111. Materialism	161. Revolution
12. Caring	62. Exploration	112. Meaning	162. Rituals
13. Cause & effect	63. Extinction	113. Meditation	163. Scale
14. Certainty	64. Faith	114. Memory	164. Science
15. Change	65. Falsity	115. Metaphor	165. Self
16. Childhood	66. Family	116. Method	166. Self-esteem
17. Classification	67. Fantasy	117. Migration	167. Self-image
18. Commitment	68. Feelings	118. Mind	168. Self-knowledge
19. Communication	69. Free will	119. Models	169. Sensitivity
20. Community	70. Freedom	120. Moral	170. Service
21. Compassion	71. Global	121. Morality	171. Socialization
22. Conflict	72. Good and evil	122. Mystery	172. Society
23. Conflict resolution	73. Goodness	123. Myth	173. Soul
24. Conformity	74. Group	124. Nature	174. Spirituality
25. Connectedness	75. Growth	125. Negotiation	175. State
26. Conscience	76. Habit	126. Objectivity	176. Story
27. Consciousness	77. Harmony	127. Openness	177. Subjectivity
28. Conservation	78. Having	128. Origins	178. Survival
29. Constancy	79. Holism	129. Ownership	179. Systems
30. Consultation	80. Humankind	130. Paradigm	180. Teacher
31. Contemplation	81. Human rights	131. Paradox	181. Teamwork
32. Control	82. Idea	132. Participation	182. Time
33. Cooperation	83. Ideals	133. Patterns	183. Tolerance
34. Courage	84. Identity	134. Peace	184. Tradition
35. Creativity	85. Imagination	135. Perception	185. Training
36. Crisis	86. Independence	136. Personhood	186. Transformation
37. Culture	87. Individuality	137. Perspective	187. Truth
38. Curriculum	88. Indoctrination	138. Philosophy	188. Understanding
39. Decision	89. Infinity	139. Physical	189. Utilitarian
40. Democracy	90. Information	140. Planning	190. Validity
41. Destruction	91. Initiation	141. Play	191. Value
42. Detachment	92. Insight	142. Poetry	192. Violence
43. Development	93. Instinct	143. Politics	193. Vision
44. Discipline	94. Integrity	144. Positivism	194. Voice
45. Discovery	95. Intelligence	145. Potential	195. Volition
46. Dualism	96. Interdependence	146. Power	196. Wholeness
47. Education	97. Intuition	147. Principles	197. Will
48. Emotion	98. Invention	148. Problem-solving	198. Wisdom
49. Empathy	99. Judgment	149. Qualitative	199. Woman
50. Energy	100. Justice	150. Qualities	200. Work

Concepts:

- Examples:
  - Analyze the water cycle of evaporation, condensation, precipitation, ground water.
    - Facts?
    - Procedures?
    - Concept?
  - Compile weather data to establish climate trends.
    - Concept?

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Increasing Complexity: Process Differentiation using Bloom's Taxonomy

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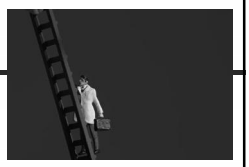
Higher Order Thinking Skills



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The Construction of Knowledge through Higher Order Thinking

- Students develop deep levels of understanding by **manipulating information and ideas** to **produce original and creative solutions/products.**

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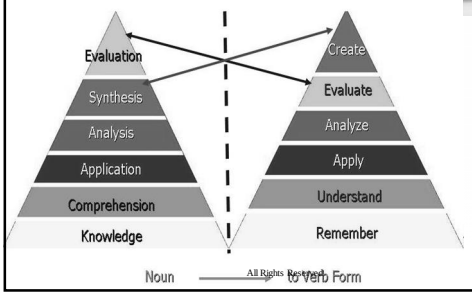
Changes to Bloom's



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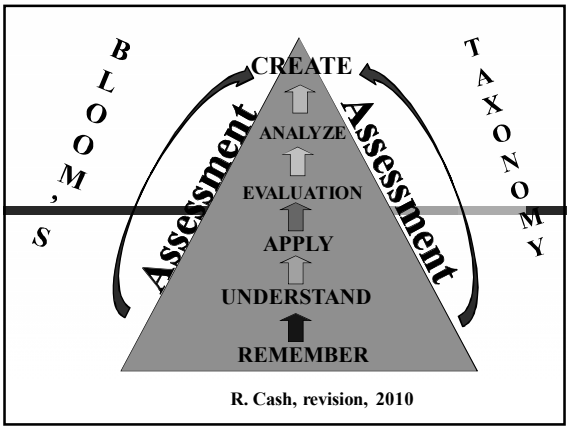
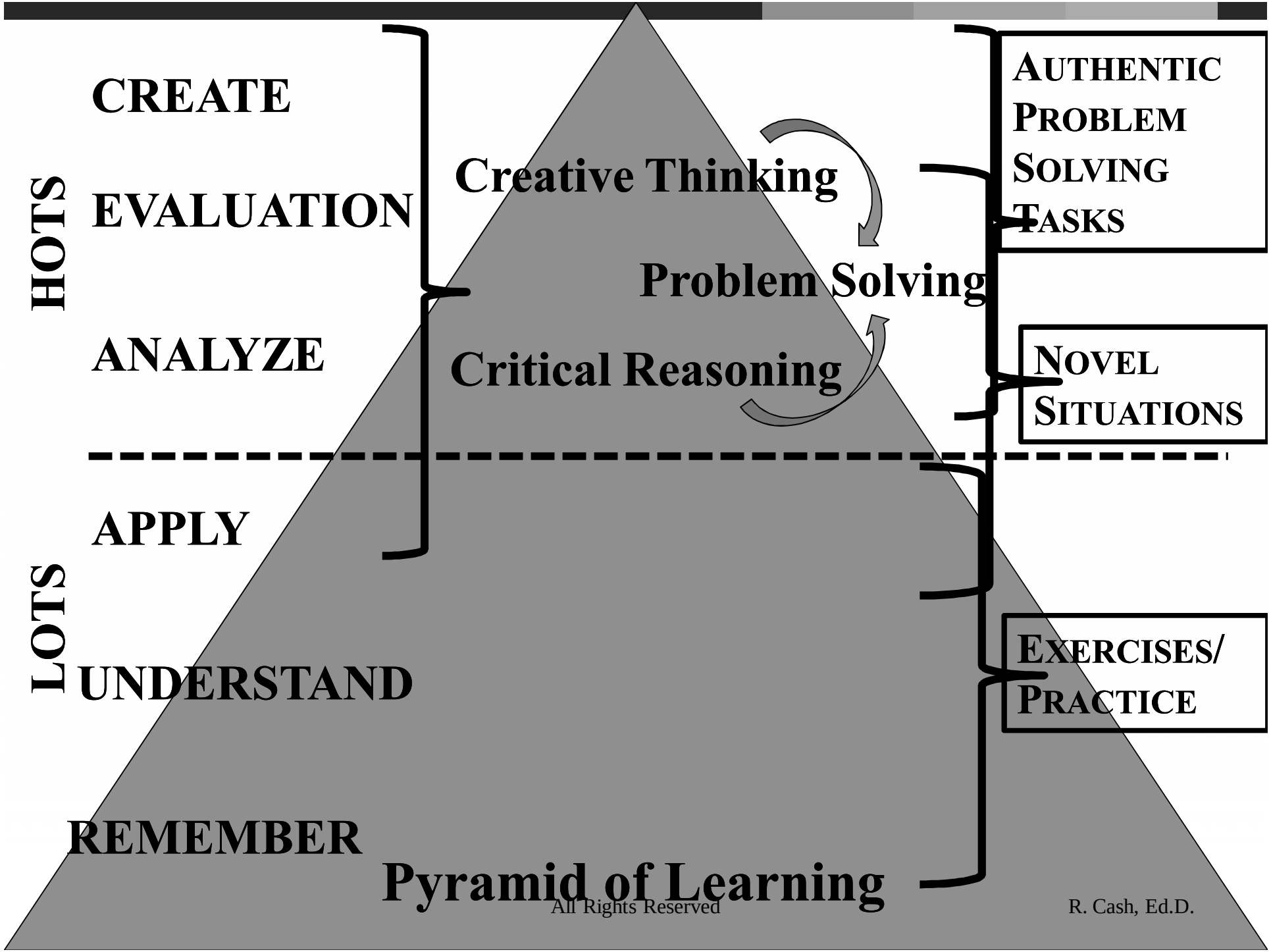


R. Cash, revision, 2010



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Leveled Learning Tasks

Resources: Chamberlin, 2010, Kaplan & Cannon 2010

Exercise/Practice

- Initial learning of facts and procedures
- Gaining familiarity with and comprehension about facts and procedures
- Uses rote memorization
- Refines skill through repeated use
- Develops automaticity

Activities include the use of:

- Text materials
- Repetition
- Listing
- Applying
- Restating

Thinking skills required:

- *Recall*
- *Application*
- *Translating*
- *Interpreting*
- *Demonstrating*

Examples:

3 x 2 = X
List the common properties of alkali metals.
Trace the process of a bill becomes law.
Describe the parts of speech.
Name some best known baroque music composers.
Build a table to assist in converting fractions to decimals.

Leveled Learning Tasks

Resources: Chamberlin, 2010, Kaplan & Cannon 2010

Novel Situations

- Situations that involve ambiguity, complexity, and provocative topics
- Uses facts and procedures to solve unforeseen/new problems
- Uses past practice and experiences to complete tasks
- No set formula or way of doing is prescribed
- Requires multiple steps and the use of multiple facts, skills, knowledge and procedures
- Increases the need for collaboration and communication
- May involve more than one right answer

Activities include the use of:

- Terms and words specific to the discipline
- Tools and rules used within the discipline
- Assessing attributes, characteristics or information
- Creative thinking, critical reasoning, problem solving
- Discussion, interpretation, research

Thinking skills required:

- *Categorizing*
- *Identifying*
- *Describing*
- *Differentiating*
- *Comparing/contrasting*
- *Proving with evidence*
- *Observing*
- *Determining relevance*
- *Summarizing*

Examples:

In what ways does the constitution inhibit the rights of American citizens?
Use various numeral systems to represent 10, 20, 40, and 80.
Detail the affects rotation and revolution have on the earth.
What other ways might the Three Pigs have avoided conflict with the Wolf?
In what ways did the economics of the times influence Rococo art?

Leveled Learning Tasks

Resources: Chamberlin, 2010, Kaplan & Cannon 2010

Authentic Problem Solving Tasks

- ñReal worldò situations/ have a context of relevance / high degrees of realism
- Outcome produces products that have value to an authentic audience
- May involve theoretical models and ñout of the boxò thinking
- Will require extensive collaboration, communication, multiple modes of doing and producing

Activities include the use of:

- Concepts, principals and theories
- Interdisciplinary
- Argumentation, research and independent study
- Collaboration and communication skills
- Logical thinking, creative thinking, critical thinking and problems finding & solving
- Decision making
- Ethical dilemmas

Thinking skills required:

- *Prediction*
- *Design and creation*
- *Fluency, flexibility, elaboration and originality*
- *Evaluation*
- *Critique*
- *Self-reflection and regulation*
- *Integration*
- *Innovation*

Examples:

- Identify a problem in the local community, brainstorm ways to solve the problem, select the most doable solution and submit your proposal to the City Council for consideration.
- With a partner, read the selected poems. After reading the poems, develop at least 5 questions you would ask the author. Submit your questions to another team of students. You too, will receive a set of at least 5 questions to answer. Take on the role of the author and answer the other teamôs questions.
- Read the assigned letters by Mrs. Adams, the wife of President John Adams. Using the Primary Source Analysis (PSA) worksheet, offer an interpretation of Mrs. Adamsô perspective and identify actions her husband may have taken because of her letters.
- Survey students in several different grade levels as to who is their favorite musical artist. From your survey data, create a presentation to the class that identifies possible trends across the grade levels.

Putting it all together

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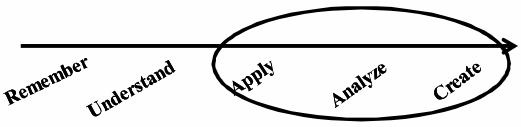
DEPTH

Concrete/Specific/Demonstration
- Facts
- Vocabulary
- Observation

Skills/Application/Details within the Discipline
- Tools
- Procedure/process
- Action/application

Concepts/Abstract/Interdisciplinary
- Big ideas
- Questions
- Intersections



COMPLEXITY

Increasing levels of thinking

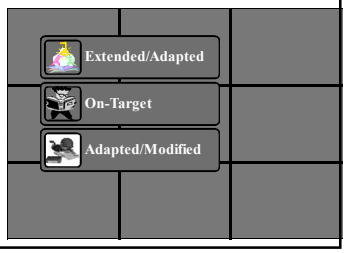
COMPLEXITY

Increasing degrees of performance

DEPTH

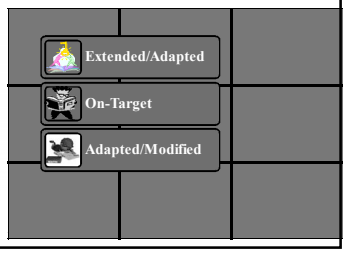
Three Levels of the Matrix

- **Level 1 (Factual)**: When students need scaffolds to reach the standard or other modifications that promote or encourage learning
- **Focus**
  - Details
  - Language
  - Foundation building



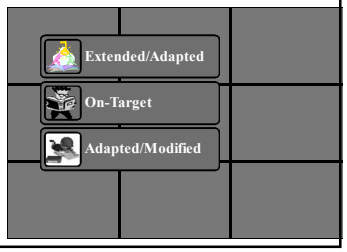
Three Levels of the Matrix

- **Level 2 (Procedural):** The level that most students should be able to do or where the standard will be met.
- **Focus**
  - Tools of the discipline
  - Actions of doing

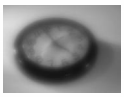


Three Levels of the Matrix

- **Level 3 (Conceptual):** Activities that challenge advanced learners or are extension beyond the standard.
- **Focus:**
  - Abstractions,
  - Connections,
  - Interdisciplinary
  - **Acts as the disciplinarian**



Tiered Assignments: Keep in mind

- Same amount of engagement 
- Same amount of time 
- Same amount of effort 

Digging Deeper Matrix (DDM)

Unit:
Students will know:
Students will be able to:
Students will understand:

Standard:

	RECALL (R)	UNDERSTAND (U)	APPLY (A)	ANALYZE (Z)	EVALUATE (E)	CREATE (C)
LEVEL 1 FACTUAL	*FOR ALL STUDENTS* **Specific/Concrete** (1R)	**Translate** (1U)	**Original Way** (1A)	**Individual Elements** (1Z)	**Check Clarity** (1E)	**Reorganize** (1C)
LEVEL 2 PROCEDURAL	**Tools/Skills** (2R)	**Interpret** (2U)	*FOR SOME STUDENTS* **Practical Way** (2A)	**Relationship Among Elements** (2Z)	**Judge Accuracy** (2E)	**Formulate** (2C)
LEVEL 3 CONCEPTUAL	**Abstract Information** (3R)	**Extrapolate** (3U)	*FOR ADVANCED STUDENTS* **Creative Way** (3A)	**Principles Governing Elements** (3Z)	**Critique Validity** (3E)	**Innovate** (3C)
ASSESSMENT: EXAMPLES						

Based on Anderson, Lorin W., and David R. Krathwohl, eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives.* New York: Addison Wesley Longman, 2001.